

## SEQUENCE LISTING

<110> THE REGENTS OF THE UNIVERSITY OF CALIFORNIA  
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REMINGTON, James

<120> LONG WAVELENGTH ENGINEERED FLUORESCENT PROTEINS

<130> REGEN1250-5

<140> US 09/575,847

<141> 2000-05-19

<150> US 08/974,737

<151> 1997-11-19

<150> US 08/911,825

<151> 1997-08-15

<150> US 08/706,408

<151> 1996-08-30

<160> 20

<170> PatentIn version 3.0

<210> 1

<211> 716

<212> DNA

<213> Aequorea

<400> 1

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aaacttaccc ttaaatttat ttgcactact ggaaaactac ctgttccatg gccaacactt      180
gtcactactt tctcttatgg tgttcaatgc ttttcaagat acccagatca tatgaaacgg      240
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ctgtccacac aatctgccct ttcgaaagat cccaacgaaa agagagacca catggtcctt      660
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<210> 2

<211> 238

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<213> Aequorea

&lt;400&gt; 2

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Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu
20          25          30

Gly Glu Gly Asp Val Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys
35          40          45

Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Phe
50          55          60

Ser Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Arg
65          70          75          80

His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Gln Arg
85          90          95

Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val
100         105         110

Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile
115         120         125

Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn
130         135         140

Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly
145         150         155         160

Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val
165         170         175

Gln Leu Ala Asp Tyr Tyr Gln Gln Asn Thr Pro Ile Leu Asp Gly Pro
180         185         190

Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser
195         200         205

Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val
210         215         220

Thr Ala Ala Gly Ile Thr His Gly Met Asp Glu Leu Tyr Lys
225         230         235

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&lt;210&gt; 3

&lt;211&gt; 720

&lt;212&gt; DNA

&lt;213&gt; Artificial sequence

&lt;220&gt;

&lt;223&gt; Engineered Aequorea-related fluorescent protein

&lt;400&gt; 3

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ggcgacgtaa acggccacaa gttcagcgtg tccggcgagg gcgagggcga tgccacctac      120
ggcaagctga ccctgaagtt catctgcacc accggcaagc tgcccgtgcc ctggcccacc      180

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ctcgtgacca ccttcggcta cggcgtgcag tgcttcgccc gctaccccga ccacatgaag 240  
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ttcaaggacg acggcaacta caagaccgcg gccgaggtga agttcgaggg cgacaccctg 360  
gtgaaccgca tcgagctgaa gggcatcgac ttcaaggacg acggcaacat cctggggcac 420  
aagctggagt acaactacaa cagccacaac gtctatatca tggccgacaa gcagaagaac 480  
ggcatcaagg tgaacttcaa gatccgccac aacatcgagg acggcagcgt gcagcccgcc 540  
gaccactacc agcagaacac ccccatcggc gacggccccg tgctgctgcc cgacaaccac 600  
tacctgagct accagtccgc cctgagcaaa gaccccaacg agaagcgcgga tcacatggtc 660  
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<223> Engineered Aequorea-related fluorescent protein

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20 25 30  
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile  
35 40 45  
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr  
50 55 60  
Phe Gly Tyr Gly Val Gln Cys Phe Ala Arg Tyr Pro Asp His Met Lys  
65 70 75 80  
Gln Gln Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu  
85 90 95  
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu  
100 105 110  
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly  
115 120 125  
Ile Asp Phe Lys Asp Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr  
130 135 140  
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn  
145 150 155 160  
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser

165                      170                      175  
 Val Gln Pro Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly  
                          180                      185                      190  
 Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Tyr Gln Ser Ala Leu  
                          195                      200                      205  
 Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe  
                          210                      215                      220  
 Val Thr Ala Ala Gly Ile Thr His Gly Met Asp Glu Leu Tyr Lys  
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 <223> His-tag amino acid sequence

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Met Arg Gly Ser His His His His His His Gly Met Ala Ser Met Thr  
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Gly Gly Gln Gln Met Gly Arg Asp Leu Tyr Asp Asp Asp Asp Lys Asp  
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Pro Pro Ala Glu Phe  
                          35

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 <212> PRT  
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<220>  
 <223> Targeting sequence

<400> 6

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<220>  
 <223> Targeting sequence

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Met Leu Arg Thr Ser Ser Leu Phe Thr Arg Arg Val Gln Pro Ser Leu  
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Phe Arg Asn Ile Leu Arg Leu Gln Ser Thr  
                          20                      25

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 <212> PRT  
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Lys Asp Glu Leu  
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<220>  
 <223> Mutant Green Fluorescent Protein

<400> 9

Cys Phe His Leu Gln Arg Trp Tyr Glx  
1 5

<210> 10  
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<220>  
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Phe Tyr His Cys Leu Arg  
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<400> 11

Ala Val Phe Ser  
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Asp Glu His Lys Asn Gln

1 5

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Phe Tyr His Leu

1

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Trp Cys Phe Leu

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Phe Tyr Asn Ile

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Cys His Gln Arg Trp Tyr Glx

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